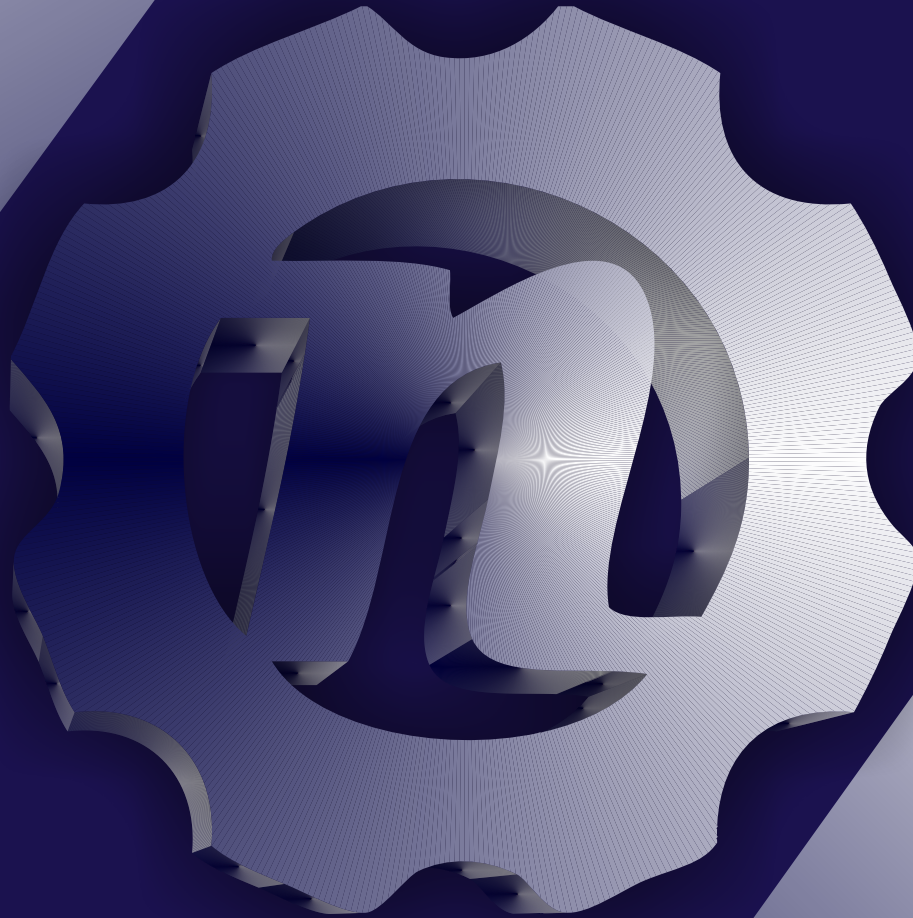




«NC «Kazakhstan engineering» JSC



**“Petropavlovsk Plant
of Heavy Machine
Building” JSC**



Product catalogue

ГОСУДАРСТВЕННАЯ ЛИЦЕНЗИЯ

Выдана АО "Петроавловский завод тяжелого машиностроения"
(г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077) на занятии видами деятельности: проектирование, изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см².

Особые условия действия лицензии:

- Генеральный директор АО "Петроавловский завод тяжелого машиностроения" А.И. Исмаилов
- Специальный отчет по лицензируемой деятельности
- Перечень видов деятельности согласно приложению к лицензии.

Орган, выдавший лицензию:
Комитет по государственному лицензированию
Министерства энергетики и природных ресурсов Республики Казахстан
Руководитель (уполномоченный): Д. Исмаилов
Заместитель: Д. Исмаилов
Дата переосвидетельствования: 04.06.2019
Номер лицензии: 002896
Дата лицензии выдана лицензией от 02.07.2016 №002892, №002893.
Город: Астана.

ПРИЛОЖЕНИЕ К ГОСУДАРСТВЕННОЙ ЛИЦЕНЗИИ

АО "Петроавловский завод тяжелого машиностроения"
(г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077)
Поиск лицензии № 002892
Дата выдачи лицензии: 02.07.2016

Перечень лицензируемых видов деятельности: "Проектирование, изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см²."

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Организация разработала комплексную техническую, конструкторско-технологическую документацию, содержащую техническое задание, описание, расчеты, чертежи, сметы, паспорты, чертежи, инструкции для изготовления оборудования

— изготовление сварного оборудования, отдельных элементов, узлов, деталей, частей, блоков, функциональных агрегатов

— монтаж, сборка, наладка и установка сооружений, конструкций, технологического оборудования, агрегатов, машин, механизмов, приборов (аппаратов) в состав частей, деталей оборудования, оснований, вспомогательных средств или работоспособности технологической установки, здания, объектов, зданий, сооружений (промышленных)

Формы и масштабность нет

Применяются стандарты: СТ РК ISO 9001:2016, СТ РК ISO 9001:2015, СТ РК ISO 9001:2016

Применение подходов к нормированию или допущению: "при выполнении производственной деятельности"

Орган, выдавший лицензию: Комитет по государственному лицензированию Министерства энергетики и природных ресурсов Республики Казахстан
Руководитель: Д. Исмаилов
Заместитель: Д. Исмаилов
Дата переосвидетельствования: 04.06.2019
Плюсиком № 1
Город: Астана
Ил. Сайымов Е.М. 1-241241

ЕБРР
БЕРЛАРИКАТ СОУВАТТАРЫН

№ КЗ.К.15.1370
Дата выдачи: 07.08.2018

Орган по сертификации: ИА "Петроавловский завод тяжелого машиностроения" (г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077)

Сертификация: "Петроавловский завод тяжелого машиностроения" (г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077)

Область сертификации: "Изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см²."

Сфера сертификации: "Изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см²."

Коды сертификации: КЗ.К.15.1370

Срок действия: 07.08.2018 - 07.08.2021

Исполнитель: ИА "Петроавловский завод тяжелого машиностроения" (г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077)

Секретарь: Д. Исмаилов
Дата: 07.08.2018

Сертификат соответствия

№ КЗ.К.15.1370
Дата выдачи: 07.08.2018

Область сертификации: "Изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см²."

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Исполнитель: ИА "Петроавловский завод тяжелого машиностроения" (г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077)

Секретарь: Д. Исмаилов
Дата: 07.08.2018

ПРИЛОЖЕНИЕ 0013150

к сертификату соответствия системы менеджмента

Петроавловский завод тяжелого машиностроения
№ КЗ.К.15.1370

Область сертификации системы менеджмента: "Изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см²."

Сфера сертификации: "Изготовление, монтаж, ремонт, химического, бурового, нефтяного, газового, теплоэнергетического, горно-шахтного, энергетического оборудования, подъемных сооружений, а также котлов с рабочим давлением выше 0,7 кг/см² и температурой давления выше 115°С, сосудов и трубопроводов, работающих под давлением выше 0,7 кг/см²."

Исполнитель: ИА "Петроавловский завод тяжелого машиностроения" (г. Петроавловск, ул. 1 Гашица, Т.РН 0140000077)

Секретарь: Д. Исмаилов
Дата: 07.08.2018

АТТЕСТАТ АККРЕДИТАЦИИ

№ КЗ.К.15.1370
от 19 августа 2018 года
действителен до 19 августа 2023 года

Калибровочная лаборатория метрологической службы Акционерного общества "Петроавловский завод тяжелого машиностроения" города Петроавловск, проспект Я. Гашица, 1

Аккредитован в системе аккредитации Республики Казахстан на соответствие требованиям ГОСТ ISO/IEC 17025:2009 «Общие требования к компетентности испытательных и калибровочных лабораторий».

Объекты оценки соответствия: калибровка средств измерений согласно аккредитации.

Область аккредитации приведена в приложении.

Руководитель аккредитации: М. Омаринов
Исполнитель: Д. Исмаилов
Дата: 19.08.2018

АТТЕСТАТ АККРЕДИТАЦИИ

№ КЗ.К.15.1688
от 26 июня 2017 года
действителен до 26 июня 2022 года

Испытательная лаборатория АО "Петроавловский завод тяжелого машиностроения" города Петроавловск, проспект Я. Гашица, 1

Аккредитован(а) в системе аккредитации Республики Казахстан на соответствие требованиям ГОСТ ISO/IEC 17025:2009 «Общие требования к компетентности испытательных и калибровочных лабораторий».

Объекты оценки соответствия: испытание продукции согласно области аккредитации.

Область аккредитации приведена в приложении.

Руководитель аккредитации: М. Омаринов
Исполнитель: Д. Исмаилов
Дата: 26.06.2017

THE NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS

Certificate of Authorization

This is to certify that "PETROAVLOVSK PLANT OF HEAVY MACHINE BUILDING" JSC
1 Ya. Gashik passage
Petropavlovsk 150009
Kazakhstan

is authorized to use the R Symbol in accordance with the provisions of the National Board Inspection Code and NB-413, Accreditation of "R" Repair Organizations.

All activities within the scope of this Authorization shall be controlled by the above location.

The scope of this Authorization is limited to:

- Metallic Repairs and Alterations Shop and Field Locations

Certification Number: 11010
Issue Date: November 6, 2018
Expiration Date: November 5, 2021
Executive Director: D. Ismailov

CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. This act of the certification mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with this certification mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY: "PETROAVLOVSK PLANT OF HEAVY MACHINE BUILDING" JSC
1 Ya. Gashik passage
Petropavlovsk 150009
Kazakhstan

SCOPE: **Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)**

AUTHORIZED: November 5, 2018
EXPIRES: November 5, 2021
CERTIFICATE NUMBER: 66,762

Board Chair, Conformity Assessment: D. Ismailov
Managing Director, Conformity Assessment: M. Omarinov

«PZTM» JSC
1, Gashek passage,
150009, Petropavlovsk,
Republic of Kazakhstan

Tel: +7 (7152) 63 03 00, 63-03-36

Fax: +7 (7152) 42 55 30

E-mail: pztm@pztm.kz

Web: www.pztm.kz



ABOUT COMPANY



Joint stock company "Petropavlovsk plant of heavy machine building" is one of the leading machine building enterprises of Kazakhstan, owned by "National company "Kazakhstan engineering" JSC, concerning manufacturing of an equipment for oil-and-gas producing, oil-and-gas processing, petrochemical, chemical, gas, energetic, etc. industry branches on the base of

modern technologies according to GOST, OST, STRK, TEMA, ASME & API standards with a glance to customer` wishes. It has multisectoral production capacity with all the technological redistributions necessary for different types of equipment manufacturing. As a former military - industrial complex enterprise, "PZTM" JSC keeps the best manner in discharged products quality.

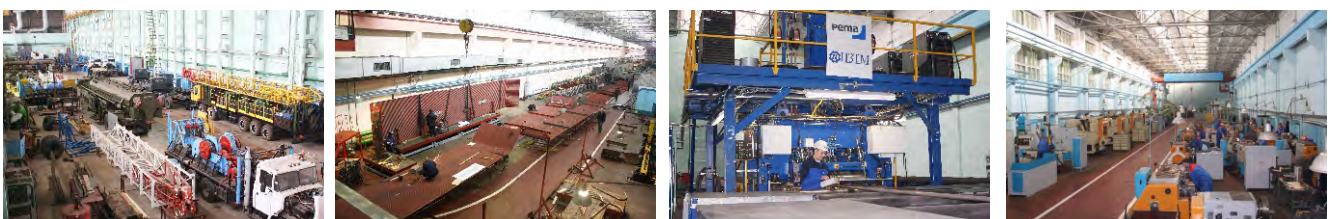
"PZTM" JSC has general licenses for all products. Since 2003 the enterprise has been certified by TUV CERT company for compliance to the requirements of ISO 9001-2009 state standard & ENISO 9001-2008 international standard.

Since 2007 the oil-extracting equipment is certified for industrial application in Russia.

Our enterprise delivers equipment for development of oilfields, operation and drilling of oil and gas wells to the leading Kazakhstan and foreign companies: "Ozenmunaygaz" JSC, "Embamunaygaz" JSC, «Oil Services Company», "TulparMunayService" LLP, "KazTransOil" LLT, etc.

Our oil-and-gas refining equipment is successfully exploited by many oil producing and refinery companies of Kazakhstan, such as: "Atyrau refinery" LLP, «Pavlodar petrochemical factory» JSC, «Kazakh gas-processing plant» JSC, "Tengizchevroil" LLP, "Emir-Oil" LLP, etc.

Energetic boiler equipment supply has been developing as a part of cooperation with power generating companies of Kazakhstan such as «Station the Ekibastuz GRES-2» JSC, "Aktobe TEC" JSC, «Cental-Asian Energetic Power Corporation» JSC group companies, etc.



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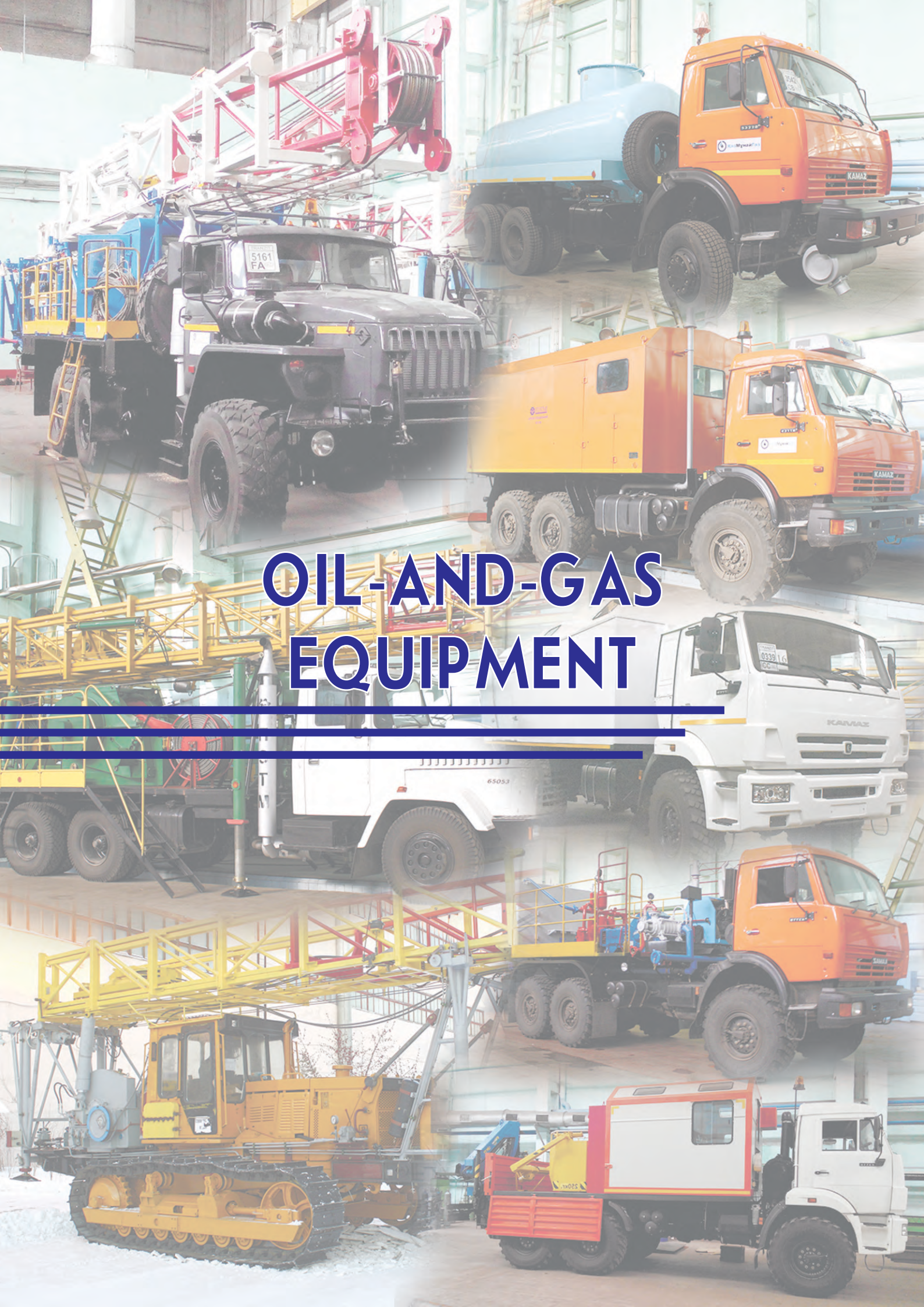
PRODUCTION CAPABILITIES

The enterprise has 6 main production workshops with 1300 equipment units which include: metal cutting devices, devices for plasma cutting, welding, thermal, galvanic, forge-and-press, founding, wood machining, plastic & rubber processing units and lifting devices.

Implementation of progressive equipment on enterprise allowed to enlarge technical capabilities and to master new technological processes, including:

- multiinstrumental programmed machining on screw, vertical- & horizontal-boring machining centres;
- gas plasma cutting of flat on cutting complex with numerical programm control;
- sheet cutting on hydraulic guillotine shears;
- superficial ion nitriding of steel and its hardening;
- high speed electric discharge sawing of parts of hard steel;
- fiveaxial multiinstrumental programmed machining of stamps and molding tools on machining centres;
- plasma cutting of armor steel;
- MIG/MAG & TIG welding in pulse mode for welding of aluminium, titanium alloys, stainless steel and armour;
- automatic hidden arc welding of carbon steel and stainless steel; tube butt welding using orbital welding head;
- tool reshaping and grinding on grinding semiautomatic machine with numerical programm control





OIL-AND-GAS EQUIPMENT

«PZTM» JSC
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MOBILE DRILLING COMPLEXES WITH LOAD CARRYING CAPACITY FROM 100 UP TO 160 TONS

Purpose:

Drilling complex is designed for drilling of exploratory & field wells; carrying out well overhaul, including kickoff of second bore in running well; other type of well construction works.



Design features and advantages:

The drilling rig consists of separate blocks mounted on semi-trailers which are transported by universal tractors, that provide mobility and shorten the time of well to well transportation;

Fault-free operation source is provided by Caterpillar C-15, C-18 power engines, Allison HD 47000FS transmission and "WPT" drives engaging pneumatic clutches;

The rig hydrosystem drive is arranged from the supplementary power take-off, which allows to perform mounting and dismounting at the well without connecting electric power and relieve the drive when doing roundtrip operations;

Fastening of the mast guy wires is arranged on the rotary base cross beam brackets, which does not require anchors and enhances mobility;

Load guy lines are equipped with force dynamometers;

Availability of two pneumatic lines (the main goes from lifter compressor, the auxiliary goes from compressors block) provides their backup and air supply increase if necessary;

Parameters of mud pumps operation can be adjusted from the driller's platform;

Extension of the derrick upper section is performed by the drawworks, both from the main and from the emergency drive;

The rotary brake is operated pneumatically from the driller's control;

The original system of split-type elements connection by means of special pins without threaded joints allows to shorten the time required for mounting and dismounting of the blocks;

There is a multimodule power block, which contains:

The drilling parameters control system with an archiving capability allows controlling the accuracy of drilling activities and roundtrip operations;

There is a possibility to output the drilling parameters data to the drill operator's computer in real-time mode and their record, besides, there is a nonvolatile block recording the basic parameters (pressure in the supply manifold and weight on hook).

MOBILE DRILLING COMPLEXES WITH LOAD CARRYING CAPACITY FROM 100 UP TO 160 TONS

TECHNICAL SPECIFICATIONS

Nominal load on hook, kN, (t)	1000 (100)	1250 (125)	1350 (135)	1569 (160)
Mounting base	self-propelled off-road platform PS-5	self-propelled off-road platform	XD 50 / 10x8	PS-6.2 chassis
Engine (KWt)	TMZ-8431 346	diesel Caterpillar 448	CAT 3412 485	diesel Caterpillar 2x540
Nominal drilling depth, m	1800	2500	2000	3000
Hook lifting speed from the basic drive, m/s	0,01...1,50	0...1,59	0,2...1,4	0,15...1,5
Drill-pipe stand length, m	10	18-20	18	21
Derrick	inclined with opened front face	two-sectional, telescopic with open front face	two-sectional, telescopic with open front face	two-sectional, telescopic with open front face
Height of derrick, m	22,5	36	35	37,2

MOBILE DRILLING COMPLEX STRUCTURE



Rotary base



Circulation system



Pump unit 2 pcs



Energetic system

«PZTM» JSC
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150009, Petropavlovsk,
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PAP 80/100 LIFTING RIG FOR WELL WORKOVER

Purpose:

PAP 80/100 lifting rig is designed for completion and repair of oil & gas wells.



Operations performed:

- mobile moving from well to well;
- assembly and disassembly of control head with the main and auxiliary hoist;
- round trip with sucker rods, tubing and drill pipes;
- mechanized spinning-up and uncoupling of tubing and drill pipes;
- construction of cement bridging in holes through derrick manifold;
- drilling-out of sand plugs and cement bridging with the help of mechanical or hydraulic drive rotary;
- fishing and other works;
- flushing-out of wells through the derrick manifold;
- breakdown elimination;
- milling of the metallic parts of drilling equipment fallen into the well;
- well development after drilling completion.

Design features and advantages:

- drawworks is equipped with cable layer that provides uniform wire winding;
- a flange for connection of drawworks emergency drive is provided;
- chassis engine emergency stop from operator's control or remote control console;
- extension of the derrick upper section is performed by hydraulic driven winch from the remote control console;
- hydraulic driven winch is used for auxiliary works;
- double action hydraulic jacks for leveling the rig;
- reverse reducer of transmission of rotary table is installed;
- drive for mechanical rotor is provided;
- drawworks chain drive is in the closed oil bath;
- Hydraulic system is dual-profiled:
 - 1-profile is designed for carrying out auxiliary operations (rig hoisting, derrick lifting, derrick upper section moving-up, hydraulic control valve operation, auxiliary drawworks operation)
 - 2-profile - hydraulic rotor operation, hydraulic wrench operation.

TECHNICAL SPECIFICATIONS

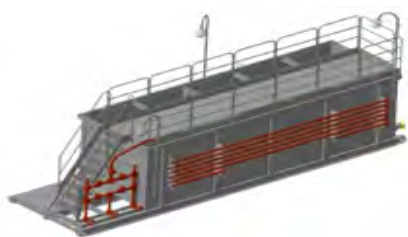
Chassis	KrAZ-63221 Euro 4, Euro 5	RKR-63221 Euro 0, Euro 2
Wheel arrangement	6x6	
Distance between the axes of the rear jacks, m	2,8	
Nominal load on hook, tf	100	
Drawworks	single drum with pneumatic disc clutches	
Crown block saver	controlled, pneumatic, actuation from hook block traction	
Pulley-block system multiplicity	4x5	
Tackle rope diameter, mm	25	
Hook block hoisting speed range, m/sec	0,01-1,50	
Conditional well drilling depth, m	2500 (when drilling with string 24 kg/m)	
Condition well depth for repair and development, m	5000 (tubing 14 kg/m)	
Machinery drive	from chassis engine and emergency electric drive	
Rig platform: - operator's station	with folding bypass bridges at both sides and level with wind shield	
Mast: - height from ground to crown block axis, m - mast inclination angle, degree - lifting height of hook block, m lifting / lowering folded mast sections upper section telescoping	double - section telescopic with opened front face 23,65 5 18 with 2 hydraulic cylinders rope, pulley block system using hydraulic drawworks	
Manifold (mud feeding downcomer): - conditional port, mm - working pressure, kgf/cm ²	with threaded coupling nuts 75 or 50 200	
Hydraulic breaker of threaded connections: - quantity, pcs - rod move, mm - tractive effort, kN (tf)	1 1000 68,7 (7)	
Lightning of mast, equipment and working station: - main; - emergency	explosion-proof, LED from the industrial power supply 220 V from chassis energetic system 24 V	
Calf line stock drum: capacity, m	100 in reserve, 333 in unit	
Hook block: - distance between hook block axis and rear jacks axis, mm	single - axis triplex 1142	
Transmission of mechanical rotary drive	with reverse gear, clutch, drive shafts	

PAP 80/100 LIFTING RIG FOR WELL WORKOVER

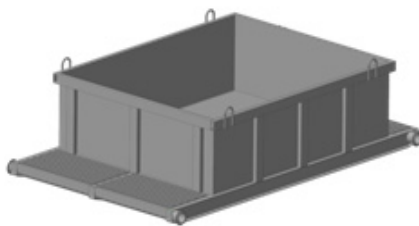
TECHNICAL SPECIFICATIONS

Load limiter: - electric - mechanical	electronic weight indicator IVE-50 or DEL - 140 to control the load on the hook, off the drive winch and on winch brake in load excess.
Set of tools spare parts and supplies for the repair and maintenance of chassis and top equipment	standard
Hydraulic system:	separate: assembly and working
Hydraulic system pressure, Mpa	working 20 assembly - 16
Pneumatic system	from chassis compressor
Pneumatic system pressure, Mpa	0,7 - 1,0
Electrical equipment voltage, V	380, 220, 24
Receivers capacity, l	200
Auxiliary drawworks load capacity, tf	3
Dimensions in transport position, m	14 200 x 2550 x 4140
Temperature operational conditions	-40 ° ... + 40 °
Total weight, kg	31 000
Durability, not less than, year	9
Warranty from the date of commissioning, month	12

OPTIONAL EQUIPMENT FOR PAP-80/100 LIFTING RIG



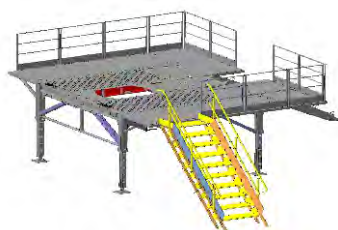
Circulation system



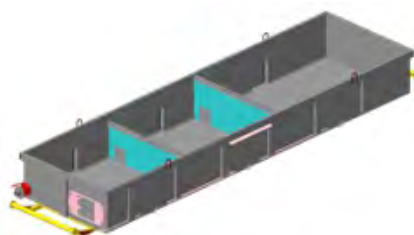
Ecological tank



Wellhead platform



Rotary base



Slime tank



Receiving bridge

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PAP 80/100 LIFTING RIG FOR WELL WORKOVER

Purpose:

PAP-80/100 lifting rig is designed for oil & gas well-workover operations and for work as a part of mobile drilling complex with load on hook up to 100 tons



Operations performed:

- mobile moving from well to well;
- assembly and disassembly of control head with the main and auxiliary hoist;
- round trip with sucker rods, tubing and drill pipes;
- mechanized spinning-up and uncoupling of tubing and drill pipes;
- construction of cement bridging in holes through derrick manifold;
- drilling-out of sand plugs and cement bridging with the help of mechanical or hydraulic drive rotary;
- fishing and other works;
- flushing-out of wells through the derrick manifold;
- breakdown elimination;
- milling of the metallic parts of drilling equipment fallen into the well;
- well development after drilling completion

Design features:

- mobile moving from well to well;
- increased angle lean of derrick allows to work at well clusters with pipes outbreak at 90° relative to longitudinal axis of rig;
- mono derrick of extended hardness;
- rig` axles load and transport dimensions do not exceed allowed regulations for public road travel;
- emergency drive, operating on electric engine of lifting rigs` all units and allowing to operate by main engine failure, is provided;
- drum with hoist wireline stock for bypass is installed;
- separate assembly & working hydrosystems improve reliability of rig;
- single drum drawworks with disc air clutches and water cooling disc brakes

TECHNICAL SPECIFICATIONS

Chassis	Module self-propelled off-road platform PS-5
Wheel arrangement	10x10.1
Engine	TMZ-8431
Power, kW (hp)	346 (470)
Clutch	YaMZ-239
Nominal load on hook, tf	80
Drawworks	Single drum drawworks with disc air clutches and water cooling disc brakes
Protector	controlled, pneumatic, actuation from running-on rope coil on drum
Hook block hoisting speed range, m/s	0,01-1,50
Mast: - Mast angle of lean.	inclined with open front face 5
Pulley-block system ratio	3x4
Drill line diameter, mm	25
Rope stock drum capacity, m	500
Mechanism drive	operates on chassis engine & on electric engine
Hydraulic systems	Separate assembly & working hydraulic systems
Pressure in hydraulic system, MPa (kgf/cm ²):	working - 19,6 assembly - 17,5
Pneumatic system	operates on chassis compressor
Pressure in pneumatic system, Mpa	0,7 - 1,0
Electrical equipment voltage, V	380, 220, 24
Receivers capacity, dm ³	240
Auxiliary drawworks load capacity, tf	3
Overall dimension of the rig in transit condition, mm	20000 x 2780 x 4000
Wellhead platform	Dismounted
Platform dimensions in working position, m	3x4
Guard platform height, m	2,5
Temperature operational conditions	-40° ... +40°

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PAP-60/80 LIFTING RIG FOR DRILLING

Purpose:

Drilling and repair of oil-and- gas wells.



Operations performed:

- mobile moving from well to well;
- assembly and disassembly of control head with the main and auxiliary hoist;
- round trip with sucker rods, tubing and drill pipes;
- mechanized spinning-up and uncoupling of tubing and drill pipes;
- construction of cement bridging in holes through derrick manifold;
- drilling-out of sand plugs and cement bridging with the help of mechanical or hydraulic drive rotary;
- fishing and other works;
- flushing-out of wells through the derrick manifold;
- breakdown elimination;
- well drilling by rotor with mechanical drive;
- kickoff and drilling of second stems;
- milling of the metallic parts of drilling equipmen

Design features and advantages:

- drawworks is equipped with cable layer that provides uniform wire winding;
- flange for connection of drawworks emergency drive is provided;
- chassis engine emergency stop from operator's control or emote control console;
- extension of the derrick upper section is performed by hydraulic driven winch from the remote control console;
- hydraulic driven winch is used for auxiliary works;
- double action hydraulic jacks for leveling the rig;
- reverse reducer of rotor drive is installed;
- air brake for drive rotor is provided;
- drawworks chain drive is in the closed oil bath;
- hydraulic system is dual-profiled:
 - 1-profile is designed for carrying out auxiliary operations (rig hoisting, derrick lifting, derrick upper section moving-up, hydraulic control valve operation, auxiliary drawworks operation)
 - 2-profile - hydraulic rotor operation, hydraulic wrench operation.

PAP-60/80 LIFTING RIG FOR DRILLING

TECHNICAL SPECIFICATIONS

Lifting rig	
Maximum allowable load on hook, kN (tf)	785 (80)
Nominal well drilling depth	2000 (when drilling with string 24 kg/m)
Nominal depth of wells for development and repair	4000 meters (tubing 14 kg/m)
Assembly-transportation base of the rig	KrAZ-63221 or RKR-63221
Machinery drive	From chassis engine
Drilling drawworks:	Single drum with disc (axle) pneumatic clutches, double speed chain drive
- chain	Double-row
- number of gears	4 (control from operator's station)
- traction power, kN (tf)	132,4 (13,5)
- hook block lifting speed, m/s	0,2 ... 1,54
- drawworks brake	Double - belt - spot - type with manual and pneumatic drive
Derrick:	double-section - telescopic with open front face 23,45
- height from ground to crown block axis, m	
Tackle system: - tool set	3 x 4
- tackle multiplicity	6
Auxiliary hydraulically driven drawworks:	29,4 (3)
- allowable load on hook, kN (tf)	
Rig platform:	With folding bypass bridges at both sides and level meter
- operator's station	With wind shield
Hydrosystem:	With an oil-heater in hydraulic tank
- number of pumps	2
- range of working pressures, (kgf/cm ²)	160 - 200
Leveling jacks:	Hydraulic, double-action
Pneumatic system:	Power supply from chassis pneumatic system
-working pressure, (kgf/cm ²)	7
Height from ground to rotary base, m	3,64
Base pipe setback with steam or hot air heating radiator, pcs.	2
Pipes capacity behind the racking platform rings for pipes with D of 114 mm, pcs.	100
Lifting rig ramp, pcs.	1
Receiving bridge, type	«drag»
- length, not less than, m	14
- width, not less than, m	2
Overall dimension of the rig in transit condition, mm	14000x2800x4000
Weight in transit condition, kg, not exceeding	31500

Base set:

- KrAZ 65053 chassis;
- Drawworks with cable layer and emergency drive connection flange;
- Derrick;
- Hydraulic breaker;
- Manifold pipe raiser with gooseneck on derrick;
- Computer complex PTK IVE-50-MB;
- Operator console with shelter;
- Light system of hook-block, drawworks & rotary base moving;
- Calf line stock drum;
- Drilling rotor drive with reverse reducer;
- Receiving bridge and racks;
- Racking platform;
- Ramp;
- Auxiliary drawworks;
- Rotary base.

Options – supplementary equipment supplied on demand in complete set with the lifting rig:

- KPR-12P wrench for spinning-up and uncoupling of pump-compressor pipes;
- Machine spinning wrench KMB-M;
- Swivel VB 80;
- Drilling hose 9m;
- Kelly;
- Straps set;
- Wrenches for pump-compressor pipes and beams;
- RUP-560 drilling rotor with pneumatic cotters;
- Auxiliary hydraulic breaker of thread connections.

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PAP-60/80 LIFTING RIG FOR WELL WORKOVER

Purpose:

Completion and repair of oil & gas wells



Operations performed:

- mobile moving from well to well;
- assembly and disassembly of control head with the main and auxiliary hoist;
- round trip with sucker rods, tubing and drill pipes;
- mechanized spinning-up and uncoupling of tubing and drill pipes;
- construction of cement bridging in holes through derrick manifold;
- drilling-out of sand plugs and cement bridging with the help of mechanical or hydraulic drive rotary;
- fishing and other works;
- flushing-out of wells through the derrick manifold;
- breakdown elimination;
- milling of the metallic parts of drilling equipment fallen into the well;
- well development after drilling completion.

Design features and advantages:

- drawworks is equipped with cable layer that provides uniform wire winding;
- a flange for connection of drawworks emergency drive is provided;
- chassis engine emergency stop from operator's control or remote control console;
- extension of the derrick upper section is performed by hydraulic driven winch from the remote control console;
- hydraulic driven winch is used for auxiliary works;
- double action hydraulic jacks for leveling the rig;
- reverse reducer of transmission of rotary table is installed;
- drive for mechanical rotor is provided;
- drawworks chain drive is in the closed oil bath;
- Hydraulic system is dual-profiled:
 - 1-profile is designed for carrying out auxiliary operations (rig hoisting, derrick lifting, derrick upper section moving-up, hydraulic control valve operation, auxiliary drawworks operation)
 - 2-profile - hydraulic rotor operation, hydraulic wrench operation.

Base set:

- KrAZ 63221 or RKR-63221 chassis;
- Drawworks with cable layer and emergency drive connection flange;
- Mast;
- Hydraulic breaker;
- Operator console with shelter;
- IVE-50-20, DEL-140 or DEL-150 weight indicator
- Calf line stock drum;
- Auxiliary drawworks.

Options – supplementary equipment supplied on demand in complete set with the lifting rig:

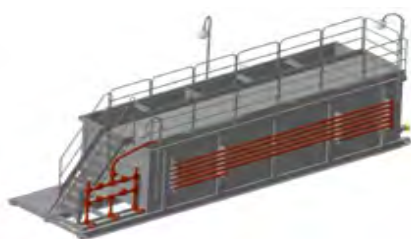
- Rotary base for well-workover operations;
- Base template;
- Receiving bridge (double axle trailer, triple axle trailer, drag);
- Circulation tank 30m³ (with manifold line);
- Sludge tank 16m³ with heating;
- Eco tank;
- Tool box;
- R-250 mechanical rotary;
- RGP-140 hydraulic rotary;
- Straps set;
- SP-80 spider;
- RVD-18m, d-50, pressure-250 atm hose;
- Wrenches for drilling pipes and beams (KTGU, KT, KShK, KShR, KTso);
- Auxiliary hoist with hydraulic drive (1.2 tf).

PAP 60/80 LIFTING RIG FOR WELL WORKOVER

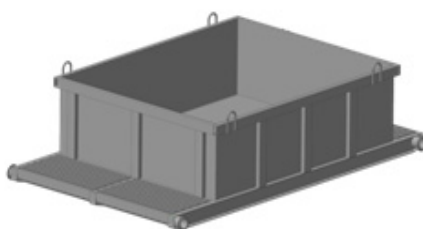
TECHNICAL SPECIFICATIONS

Maximum allowable load on hook, kN (tf)	785 (80)
Nominal well drilling depth	2000 meters (when drilling with string 24 kg/m)
Nominal depth of wells for development and repair	4000 meters (tubing 14 kg/m)
Assembly-transportation base of the rig	KrAZ-63221 or RKR-63221
Machinery drive	From chassis engine
Drawworks:	Single drum with disc (axle) pneumatic clutches, double speed chain drive in oil bath
- chain	Double-row
- number of gears	4 (control from operator's station)
- traction power, kN (tf)	132,4 (13,5)
- hook block lifting speed, m/s	0,2 ... 1,54
- drawworks brake	Double - belt - spot - type with manual and pneumatic drive
Derrick:	double-section - telescopic with open front face
- height from ground to crown block axis, m	23,45
Tackle system: - tool set	3 x 4
- tackle multiplicity	6
Auxiliary hydraulically driven drawworks:	1,5 tf with accessories directly through pulley block
- allowable load on hook, kN (tf)	29,4 (3)
Rig platform:	With folding bypass bridges at both sides and level meter.
- operator's station	With wind shield
Hydrosystem:	With an oil-heater in hydraulic tank
- number of pumps	2
- range of working pressures, (kgf/cm ²)	160 - 200
Leveling jacks:	Hydraulic, double-action
Pneumatic system	Power supply from chassis pneumatic system
- working pressure, (kgf/cm ²)	7
Overall dimension of the rig in transit condition, mm	14 000 x 2800 x 4000
Weight in transit condition, kg, not exceeding	31500

OPTIONAL EQUIPMENT FOR PAP-60/80 LIFTING RIG



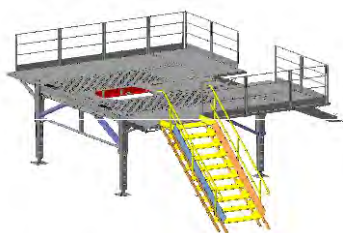
Circulation system



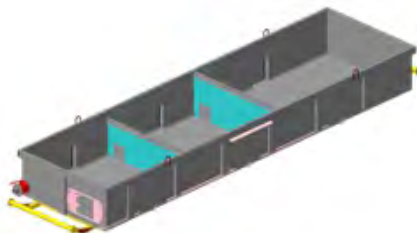
Ecological tank



Wellhead platform



Rotary base



Slime tank



Receiving bridge

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SELF-PROPELLED DRILLING RIG "KATUSHA"

Purpose:

Self-propelled drilling rig «Katusha» is designed for drilling, swabbing and flushing-out of hydro-geological wells.



Operations performed:

- mobile moving from well to well;
- assembly and disassembly of control head with the main and auxiliary hoist;
- round trip with sucker rods, tubing and drill pipes;
- mechanized spinning-up and uncoupling of tubing and drill pipes by means of hydraulic breaker;
- construction of cement bridging in holes through derrick manifold;
- drilling-out of sand plugs and cement bridging with the help of mechanical drive rotary;
- fishing and other works;
- flushing-out of wells through the derrick manifold;
- drilling holes with the help of mechanical drive rotary;
- milling of the metallic parts of drilling equipment fallen into the well.

Design features:

- single drum drawworks with two disc air clutches that don't require additional compressor and allow efficient switching from one speed range to another;
- drawworks is equipped with a cable layer which provides uniform winding of drilling and bailing rope;
- a flange for connection of drawworks emergency drive is provided;
- chassis emergency stop from operator's control and rigging-up console;
- upper section of derrick is moved-up with hydraulic driven hoist from the remote control console;
- swabbing is performed with multifunctional drawworks;
- hydraulic driven winch is used for auxiliary works;
- device for fixing of hook block and protection of derrick from damage while moving of rig;
- double-action hydraulic jacks for rig leveling;
- RV reducer of rotary table transmission with tire-type pneumatic clutch is installed;
- rotary R400 is permanently installed at the platform;
- pipes rope conveyer with tension hoist;
- drum for storage of swabbing line and device for moving the drill line to the multifunctional hoist.

Options – supplementary equipment supplied on demand in complete set with the lifting rig:

- KPR-12P wrench for spinning-up and uncoupling of tubing;
- Drilling swivel VB-80;
- Suspended tongs KMB-M;
- Set of straps.

SELF-PROPELLED DRILLING RIG "KATUSHA"

TECHNICAL SPECIFICATIONS

Maximum allowable load on hook, kN (tf)	785 (80)
Nominal well drilling depth	1000 meters (tubing 28 kg/m)
Nominal swabbing depth, m	450
Assembly-transportation base of the rig: - automobile chassis	KrAZ-65053-02
Machinery drive	From chassis engine
Multifunctional drawworks:	Single drum with disc (axle) pneumatic clutches, double-speed chain drive in oil bath
- chain	Double-row (†-44,45)
- number of gears	4 (control from operator's station)
- traction force, kN (tf)	132,4 (13,5)
- hook block lifting speed, m/s	0,2 ... 1,54
Derrick: Double-section – telescopic with open front face	Swabbing line roller is installed on the crown block.
- height from ground level to crown block axis, m	23,45
- derrick inclination angle, degree	1
- hook block lifting height, m	19 - 20,6
Pulley-block system: tool set	3 x 4
Overload limiter:	
- electrical	Electronic weight indicator IVE-50-10 for control of hook load, switching off drawworks drive and switching on drawworks brakes when overloading.
- mechanical	For drawworks drive switching off and drawworks brake switching on when overloading (84t)
Drive transmission of mechanical rotary table	With RV reducer, tire-type pneumatic clutch and drive shafts
Auxiliary hydraulic driven hoist:	
- rope diameter, mm	12x2
- allowable load on hook, kN (tf)	29,4 (3)
Manifold (standpipe for mud feeding):	With threaded coupling nut (quick disconnecting joint)
Rig platform:	With folding bypass bridge along both sides, level meter for putting the rig in horizontal position
Working platform:	Folding
- overall dimensions, mm	1400x2530
Hydraulic system:	with pump NSh-100M-3
- Assembly line:	
- working pressure, MPa	16
- Working line:	
- working pressure, MPa	20
Leveling jacks:	Hydraulic, double-action
Pneumatic system:	Power supply from chassis pneumatic system equipped with air drier
- working pressure (kgf/cm ²)	7
- max. power, kWt	30
Mechanical rotary R400:	
- table opening diameter, mm	400
- torque, Nm	11700
- load on table, t	60
- kelly, mm	112x112x11000
Mud pump NB-80-07:	With suction and discharge manifold, drive from chassis engine
- capacity up to, l/sec	10
- pressure up to, MPa	10
Overall dimension of the rig in transit condition, not exceeding, mm	14000 x 3000 x 4000
Weight in transit condition, kg, not exceeding	31 500

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APRS-40 LIFTING RIG

Purpose:

Repair of oil & gas wells.

Operations performed:

- assembly and disassembly of control head;
- round trip including those with sucker rods and tubing;
- mechanized spinning-up and uncoupling of pump-compressor pipes column;
- accident elimination.



Design features:

- single drum winch with one single-disc pneumatic friction clutch;
- extension of the derrick upper section is performed by the hydraulic winch from the remote control console;
- device for fixing hook block and protection of the derrick from damage when moving the rig;
- hydraulic jacks for leveling the rig, single-acting (URAL) or double-action (KRaz).

Options – supplementary equipment supplied on demand in complete set with lifting rig:

- wrench APR-2GP;
- auxiliary drawworks;
- GPS terminal for monitoring;
- fuel sensor
- wellhead derrick;
- general utility power wrench;
- circular sucker-rod tongs;
- "Granit" wrench;
- wrench KPR-12;
- general machine wrench;
- hydraulic breaker;
- wrenches KGTU for NKT D – 60-89;
- pipe wrenches KT.000, KT.000-01, KT.01;
- sucker-rod tongs;
- spider;
- receiving bridge;
- circulation tank;
- tool box;
- swivel Vp50, Vp60;
- support for headlighter installation;
- auto hydraulic jack (10-30 t);
- strap set (50t);
- rod hook;
- weight indicator DEL-140 or IVA-50.
- pipe store;
- special recoil device;
- plug-in extra wheel fastener;
- wind gauge.

Lifting rig complies with requirements of Safety rules in oil-and-gas industry set in
Republic of Kazakhstan and Russian Federation

TECHNICAL SPECIFICATIONS

Rated load on hook, kN (tf)	392 (40)	
Maximum allowed load on hook, kN (tf)	490,5 (50)	
Assembly-transportation base of the rig:	URAL-4320	KrAZ-65053
- automobile chassis		
Machinery drive	From chassis engine	
Winch:	Single drum with disc pneumatic clutch	
- number of gears	3; reverse - 1	
- maximum traction force, kN (tf)	83,4 (8,5)	
- hook block lifting speed, m/s	0,2...1,18	
- winch brake	Double-belt-spot-type with pedal pneumatic and manual mechanical control	
Derrick:	Dual-section, telescopic with open front face	
- upper section fixing mechanism	Mechanical with pneumatic drive and automatic opening on section moving-up	
- signaling of derrick upper section moving-up	Visual (signal lamp on remote control console) and electric (sound signal)	
- height from earth level to crown block axis, m	18	
- derrick inclination angle, deg	4° 12'	
- distance from the plane of trailing feet to hole axis, mm	1100	
- height of hook block lift, m	14	
- diameter of derrick guy lines going to chassis and anchors, mm	14	
Pulley-block system:	3 x 4	
- tool set		
- drilling line diameter, mm	22	
- tackle multiplicity	6	
Hook block:	Single axle with triplex hook	
Drilling line bypass drum:		
- rope capacity, m	85	
Hydraulic system:	1	
- number of pumps NSh-100G-4		
- working pressure range, (kgf/cm ²)	16-21	
- pump capacity, l/min	188	
Leveling jacks:	2	
- front mechanical screw-type, pcs.		
- rear hydraulic jacks, pcs.	2	
Pneumatic system:	Power supply from chassis pneumatic system	
- working pressure, (kgf/cm ²)	7	
Illumination of derrick, rig equipment and working places:	Explosion-proof construction, from on-board net 24V or from external source, voltage 220 V, 50 Hz	
Rig overall dimensions in transit condition, mm	URAL-4320	KrAZ-65053
- length	10600	10850
- width	2760	2760
- height	4260	4350
Weight in transit condition, kg	21100	22300
Full load: - on front axle, kg	5400	5700
- on rear bogie axle, kg	15700	16600
Climatic characteristics:	from -40 °C up to +40 °C	
- operating temperature conditions		

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PTP-40 TRACTOR LIFTING RIG

Purpose:

Repair of oil & gas wells.

Operations performed:

- mobile moving from well to well;
- assembly and disassembly of control head equipment;
- round trip including those with sucker rods and tubing;
- accident elimination.



Design features:

- single-drum winch with one single-disc pneumatic friction clutch;
- upper section of derrick is moved up by hydraulic winch from the remote control console;
- device for fixing hook block and protection of the derrick from damage when moving the rig;
- double-action hydraulic jacks for leveling the rig.

Options – supplementary equipment supplied on demand in complete set with lifting rig

Wrench APR-2GP:

- hydraulic drive
- working range – tube diameters, mm - 48, 60, 73, 89
- maximum torque, kN•m (kgf•m) - 3(300)

TECHNICAL SPECIFICATIONS

Lifting rig	
Rated load on hook, kN (tf)	392 (40)
Maximum allowable load on hook, kN (tf)	490,5 (50)
Assembly-transportation base of the rig: - tractor	T-10M, T10MB (swamp)
Machinery drive	From tractor engine
Winch:	Single drum with disc pneumatic clutch
- number of gears	4, reverse - 2
- maximum traction force, kN (tf)	83,4 (8,5)
- hook block lifting speed, m/s	0,2...1,18
- winch brake	Double-belt-spot-type with pedal pneumatic and manual mechanical control
Derrick:	Double-section, telescopic with open front face
- height from earth level to crown block axis, m	18
- derrick inclination angle, deg.	4°50'
- distance from the plane of trailing feet to hole axis, mm	1400
- hook block lifting height, m	14
Hook block:	Single-axle with triplex hook
Overload capacity: - mechanical	For switching-off the winch and switching-on the brakes on overloading
Protector (limiter of hook block lift)	Electropneumatic
Hydraulic system:	1
- number of pumps	
- working pressures range, MPa	16-21
Leveling jacks:	4
- number of items, pcs.	
Pneumatic system:	Power supply from compressor driven by tractor engine
- working pressure, (kgf/cm ²)	7
Illumination of derrick, rig equipment and working places:	Explosion-proof construction, from on-board net of the tractor
Rig overall dimensions in transit condition, mm	10080x2800x4400
Weight in transit condition, kg	26 000

Product complies with requirements of Safety rules in oil-and-gas industry set in Republic of Kazakhstan and Russian Federation

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SPECIAL TRUCK AS-204 WITH STEAMER 1600/100

Purpose:

Truck is designed for dewaxing of wellbottom zone, pipe lines, tanks, fittings and other oil field equipment by high pressure saturated steam.

Operations performed:

- mobile moving from well to well;
- dewaxing of wellbottom zone;
- washing of pipelines, reservoirs, and various oil field equipment.



Design features:

- possibility of manufacturing the truck on Ural, KrAZ, KAMAZ chassis with pump 2.3PT25.

TECHNICAL SPECIFICATIONS

Chassis mounting base	KAMAZ 3228/43118	KrAZ 5053	Ural 4320
Steam production capacity, kg/h	500/1600		
Steam temperature, C	175-310		
Steam pressure, MPa (kgf/cm ²)	0,78(8)-9,8(100)		
Time required for steam production from the moment of starting the boiler, min	20		
Water tank capacity, m ³	5,2		
Overall dimensions, mm			
- length	9100		
- width	2500		
- height	3700		
Total weight of the rig, kg	20400		

Truck complies with safety requirements of RoK & RF, ST AO 30482858-023-2009 and has compliance certificates and appliance permit .

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SPECIAL PUMP CEMENTING TRUCK ASTs-320

Purpose:

Truck is designed for pumping various fluid mediums during well cementation, and for other washover-squeezing works performed during construction, development and repair of wells.



Operations performed:

- washover-squeezing works at the well;
- well cementation.

Auxiliary operations

- transfer of different fluids and liquid solutions.

Design features:

- possibility of manufacturing the water-feeding tank of the truck with a diesel drive.

TECHNICAL SPECIFICATIONS

Chassis mounting base	ASTs 320, ASTs 320P		
	KAMAZ 43118	KrAZ 65053	URAL 4320
High pressure pump	Two-piston pump(type 9T)		
Useful capacity, not exceeding, kW	106		
Maximum pressure, MPa (For piston D100 mm)	32		
Maximum pump delivery, dm ³ /s (For piston D 100 mm)	14		
High pressure pump drive	from chassis traction engine		
Water-feeding pump	centrifugal pump, multistage, sectional		
Rotation frequency of pump shaft, rev/min	2100...2900		
Rated pressure, MPa	1,0		
Pump delivery, dm ³ /s	10,5		
Water-feeding pump drive	from auxiliary engine D 120		
(not installed on special truck ASTs 320P)			
Capacity of measuring tank, not less then, m ³	6	6	6 or 3
Capacity of cementing grout tank, m ³		0,25	
Internal diameters of manifold tubing, mm			
- suction line		100	
- pressure line		50	
Overall dimensions, mm, not exceeding			
- length	9525	10500	10000
- width	2500	2500	2500
- height	3560	3500	3500
*1 Total weight of the rig when moving, not exceeding, kg	18000	17800	18000

Special truck complies with the safety requirements of RoK and RF and has compliance certificates of RoK and RF.
*1 Special truck moves only with empty measuring tank

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SPECIAL PUMP CEMENTING TRUCK ASTs-320

Purpose:

Truck is designed for pumping various fluid mediums during well cementation, and for other washover-squeezing works performed during construction, development and repair of wells.



Operations performed:

- mobile moving from well to well;
- washover-squeezing works at the well;
- well cementation;
- auxiliary operations such as transfer of different fluids and liquid solutions.

Auxiliary operations

- transfer of different fluids and liquid solutions.

Design features:

- possibility of manufacturing the truck on KAMAZ, KRAZ, chassis.

TECHNICAL SPECIFICATIONS

Assembly base - chassis	KRAZ 65053	KAMAZ 43118
High pressure pump	triplex pump	
Useful capacity, kWt (h.p.)	120 (163)	
Maximum pressure, MPa (for piston D100 mm, D125 mm, D140 mm)	50	30
Maximum delivery, dm ³ /sec (for piston D100 mm, D125 mm, D140 mm)	11,14	17,4
Water-feeding pump	Centrifugal, multistage, sectional TsNS 38-154*2	
Water-feeding pump drive	From auxiliary engine D120*2	
Water-feeding pump pressure, (MPa, not less than)	1,0	
Water-feeding pump delivery, (dm ³ /s, not less than)	10,5	
Internal diameters of manifold tubing, mm		
- suction line	100	
- pressure line	50	
Capacity of measuring tank, m ³	6	
Capacity of cementing grout tank, (m ³ , not less than)	0,25	
Overall dimensions, mm		
- length	10500	8800
- width	2550	2550
- height	3500	3400
*1 Total weight of the rig when moving, not exceeding, kg	15800	15000

*1 Special truck moves only with empty measuring tank.

*2 By the Client's demand parameter can be changed.

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SPECIAL PUMPING ACID TRUCK ASK-500

Purpose:

Truck is applied for acid treatment of wells, transporting and charging of acid mixtures used for acid treatment of well bottom zone.



TECHNICAL SPECIFICATIONS

Assembly base -chassis	KRAZ 65053	KAMAZ 43118
High pressure pump	Three-piston	
Piston stripping, mm	130	
Piston diameter, mm	100	125
Useful hydraulic power, kW (h.p.)	132(180)	
Highest charging pressure, MPa	50	32
Highest ideal feeding, h/p		
High pressure pump drive	From engine chassis through power takeoff, drive shaft and reducer	From engine through power takeoff, drive shaft
Manifold:		
Receiving line flow section diameter, mm	100	
Charging line flow section diameter, mm	50	
Auxiliary (dismountable) pipeline:		
- conditional passage, mm	50	
- total length, m	20	
Tank volume, m ³	7,0	
Transporting and charging fluid: solution of inhibited hydrochloric acid (concentration 8-35%), and in mixture with acids: etching acid (up to 5% of hydrochloric acid volume) and acetic acid (up to 2 % of solution volume) with temperature no more than 90°C		
Rig control	From truck cabin	
Overall dimensions, not exceeding, mm		
- length	9600	9000
- width	2550	2550
- height	3500	3600
Maximum weight, kg	15000	20750

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**SPECIAL REPAIR
TRUCK ASR**

Purpose:

Repair and preventive maintenance of oil-field above-ground equipment, technological pipelines, oil-gathering stations, conventional pumping units as well as water supply equipment & sewers in municipal engineering of settlements.



Operations performed:

- 1) handling, welding, gas cutting, metal and mechanical operations;
- 2) transportation of different equipment units;
- 3) extraction of liquids.

Note - Replacement of equipment by another types and brands with similar specifications is allowed if technical specification of truck remains at the same level.
Refer to maintenance documentation for specific data of indicated equipment.

At the request of the customer, the crane-manipulator unit is equipped with a cradle for high-altitude work: the cradle is equipped with a gravity horizontal mechanism and a device for fixing the working position with respect to the boom equipment, as well as the crane emergency lowering system in case of hydraulic system failure of the crane and engine of the car. Carrying capacity - not less than 250 kg, electrical insulation - up to 400 Volts, weight of the cradle is not more than 280 kg.

TECHNICAL SPECIFICATIONS

Assembly base - chassis	KAMAZ 43118	
Overall dimensions in transit condition, mm		
- length	8535	
- width	2540	
- height	3770	
- total weight, not exceeding, kg	17000	
Workshop		
- body structure:	- framework type van, all-metal, welded, heat-insulated, heated	
- air heater, model	PLANAR -44D-24	
- intercom, model	PU-07A	
- cargo bed	Open on-board load board	
- repair crew, men, not exceeding	6	
Power supply, Watt:		
- from alternating current generator	380/220	
- type	three phase	
- drive	from chassis traction engine	
- from outer industrial network электросети	380	
- system of direct current	from auto chassis	
- nominal voltage	24	
Crane manipulator device model	IM 150	IM 77
- load capacity, net, ts		
- maximum	6,05	3,0
- on max work overhang	1,32	1,1
- overhang, m:		
- max	8,6	6,0
- max working	8,4	2,5
- min	2,0	2,5
- max hoisting height, m	10,55	8,0
- max lowering -In depth, m	6,02	5,0
- control mode	hydraulic	
- control method	from the ground	
- load-handling device	hook	
Desk-size drilling machine	AS2116M	
- model		
- max nominal drilling diameter, mm	16	
- spindle speed range, pcs	6	
- min spindle rotary speed, rpm	170	
- max spindle rotary speed, rpm	2000	
Cutter grinder		
- model	ПРОМА BKS - 2500 25002502	
- nominal rotary speed, rpm	2950	
- disc diameter, mm.	250	
- disc thickness, mm	32	
Pump	Gnom 25-20	
- feeding, m3/h	25	
- pressure, m	20	
Autonomous welding machine with auxiliary generator	ADD-4004MV	
- model		
- engine, type	D-144	
- nominal welding current, A	400	
- nominal operating voltage, V	36	
Gas station		
- oxygen cylinder volume, l	40	
- propane cylinder volume, l	50	
- reducer BKO - 50, pcs.	1	
- reducer BPO -5, pcs.	1	
- propane burner, pcs.	1	
- propane cutter, pcs.	1	
Lubricant supercharger		
- model	S321M	
- tank capacity, l	40	
- lubricant pressure, MPa	35	

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UP MOBILE UNIT

Purpose:

UP mobile unit is designed for chemical treatment of wells operated in conditions of underground uranium leaching

Design features:

UP mobile unit provides safe pumping, preparation and feeding of chemical solutions various types directly into the filter part of the technological well, as well as increases safety and environmental compatibility of the work.



UP is designed for operation in macro-regions with moderate and cold climates, category 1 according to GOST 15150-69 at temperatures from -40 °C up to + 40 °C

TECHNICAL SPECIFICATIONS

Assembly - transport base	KAMAZ-43118
- engine power, not less than	221 kW (300 hp)
- engine drive, not less than	From the generator through cardan transmission of power take -off
- maximum movement velocity, km/h	50
- maximum angle of ascent	18°
- maximum angle of descent	25°
- allowable lateral roll	15°

TECHNICAL SPECIFICATIONS

Overall dimensions in transport position, mm, not exceeding:	
- length	10200
- width	2550
- height	3850
Gross weight, kg, not exceeding:	20800
Distribution of total mass, kg, not exceeding:	
- with empty tank:	
1) to the front axis	5795
2) to the axis of the rear trolley	12680
- with full tank:	
1) to the front axis	5225
2) to the axis of the rear trolley	15355
Lifting equipment:	
Hoist to logging lifter	
Overall dimensions, mm:	
- length	2050
- width	2000
- height	1470
- capacity of the hoist drum, m	800
- maximum winding speed of the umbilical cord on outer turns, m/min , not exceeding	20
- working temperature	- 10° C ... +40° C
- electrical equipment management	stationary/mobile
- electric device	asynchronous three-phase, with frequency converter and reducer
Pump for supply solution to the well :	
- type	peristaltic
- productivity (at 50% unwinding of the umbilical), m ³ / h	3,2
- electric motor:	
1) power, kW	2,2
2) supply line voltage, V	380 x 3
3) frequency of the current mains, Hz	50
- working temperature	-10° C ... +40° C
Depth control system	
- supply voltage of alternating current, V	220
- power consumption, W, not exceeding	8
- length of connecting cable, m	60
- working temperature	-10° C ... +50° C

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

Capacity for making, storage and transportation of bifluoride complex :	
- capacity, m ³	3
- material	fiberglass , resistant to aggressive media of mineral acids
- operating temperature	-40° C ... +40° C
Tank filling pump:	
- type	centrifugal
- productivity, m ³ /h	5
- maximum output pressure, bar	4,31
- electric motor:	
1) power, kW	7,5
2) supply line voltage, V	380 x 3
3) frequency of the current mains, Hz	50
Generator	
- power, kW	28-32
Van heater:	
	PLANAR-44D
	24
- maximum heat output, kW	4
- weight, kg, not exceeding	10
- van heating	autonomous heating
- fuel type	diesel fuel GOST 305
Specified service life , years	9



TANK TRUCK ATs

Purpose:

Truck is designed for transportation of non-aggressive process liquids with density not exceeding 1.3 gr/cm³, including sea water and formation waters in amount of 10 and 12 m³.



Design features:

- possibility of manufacturing the truck on KrAZ, KAMAZ chassis;
- can be manufactured with pump ATs10N and without ATs10 pump with tank emptying by gravity flow;
- high corrosion resistance of tank (internal corrosion resistance coating; increased wall thickness);
- tank truck with fiberglass tank 10 m³ capacity is designed for transportation of sea service water with temperature not exceeding 95°C and also boric acid solutions with concentration up to 37% with no hydrofluoric acid dash added and temperature from -40°C up to +50°C .

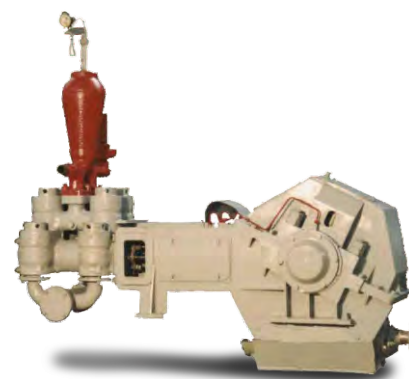
TECHNICAL SPECIFICATIONS

Tank lorry type	ATs 10N (KAMAZ 53228)	ATs 12N (KrAZ 65053)
	ATs 10 (KAMAZ 53228)	ATs12 (KrAZ 65053)
	ATs 10N (KrAZ 63221)	ATs 12 (KrAZ 63221)
	ATs 10N (KrAZ 65053)	
Rated capacity at temperature 20C, m ³ (l)	10 (10000)	12 (12000)
Type of pump for fluid transit	ODN 120-100-65	ODN 120-100-65 or 1SVN
Pump capacity at chassis engine rotation frequency of 1450 rpm	1450 rpm 65 1900 rpm 38	38
Pump drive	Mechanical, from the truck traction engine	
Thickness of tank walls, mm	5	
Overall dimensions		
- length, not exceeding, mm	12000	
- width	depends upon the chassis technical data	
- height, mm	3500	



CEMENTING PUMP 9TM

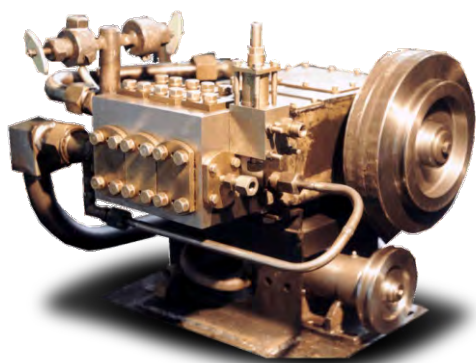
Cementing pump 9TM is designed for injection of different flow mediums (cement and mud solutions, and other fluids) during well cementation while boring and overhaul, and performing other flushing-squeezing works in oil and gas wells.



TECHNICAL SPECIFICATIONS

Useful power, kW	108
Piston stroke, mm	250
Globoidal gear ratio	20,5
Diameter of changeable barrels and pistons, mm	100, 115, 127
Pipes passage diameter, DP, mm	
- suction line	100
- pressure line	50
Maximum pressure, MPa (For piston: D 100 mm, D 115 mm, D 127 mm)	32...20...18,6
Maximum pump delivery, dm ³ /s (For piston: D 100 mm, D 115 mm, D 127 mm)	14...19... 23
Weight, kg	2600

TRIPLEX PLUNGER PUMP 2.3 PT-25



Triplex plunger crank horizontal pump is designed for transfer of fluids, chemically neutral to the hydraulic part materials with temperature up to 60°C (with allowed short-term increase of transferred fluid temperature up to 100°C) with kinematic viscosity not more than 8 cm²/s, not containing solid particles in amount of more than 0,2% of weight and sizing not over 0,2 mm.

TECHNICAL SPECIFICATIONS

	2.3 PT-25
Plunger diameter, mm	25
Outlet pressure, MPa	10
Pump delivery, m ³ /h	2
Shaft rotary speed, rpm	320
Power consumption, kW	
Weight, kg	355



HYDRAULIC (PNEUMATIC) SPIDER SG-50; SG-60 (SP-50; SP-60)

Hydraulic spider is designed for gripping and holding suspended the strings of oil-well tubing and drill pipes. Spider of split type construction provides safety working in the event of emergency conditions. Spider consists of a split shell with a flap. The slip hanger is connected with hydrocylinder by means of lever system, which permits controlling the slip hanger travel from remote control panel.



TECHNICAL SPECIFICATIONS

SG-50 (SP-50); SG-60 (SP-60) spider load capacity, not less than, t	50, 60
Diameter of gripped tubes, mm	60, 73
Diameter of gripped tubes, mm (by order)	48, 89, 102, 114
Weight, kg	90

HYDRAULIC ROTOR RGP-140



Rotary RGP-140 is designed for performing boring works (drilling-out of cementing jams), and also for mechanical spinning-up and uncoupling of drilling pipes and tubing, keeping pipe string suspended.

TECHNICAL SPECIFICATIONS

Hydraulic rotor capacity, kW	60
Slip hanger capacity, t	60
Rotary table rotation - continuously variable control, rpm	3...75
Change of rotation direction is performed by the rig hydraulic control valve	
Table opening diameter, mm	140
Slip hanger for pipes, mm	60; 73; 89
Torque, Nm	7270...15 000
Weight, kg	512
Overall dimensions, mm	930 x 940 x 620



ROTOR 9UPA.51.00.000

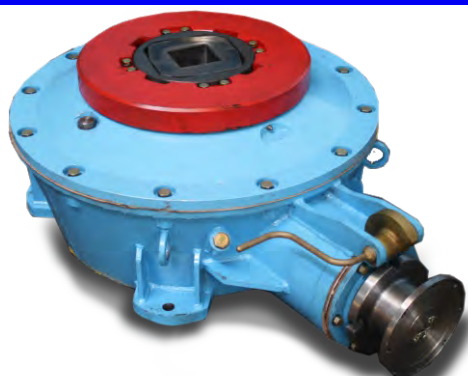
Mechanical drive rotor 9UPA.51.00.000 is designed for drilling operations (cementing plug drilling out), for mechanical screwing and loosening of oil-well tubes and also for pipe string re-tention.



TECHNICAL SPECIFICATIONS

Drive	Mechanical
Table opening, mm	142
Load capacity, tons, not less	500 (50)
Table rotations per minute, not exceeding	160
Max. torque consumption, N/m	12000
Guide well tube square side, mm	80
Slip hanger lifting	Manual, lever
Slip hanger for tubes with diameter, mm	60,73,89,102,114
Rotor weight, kg	750

ROTOR R-250



Rotor R-250 is designed for drilling instrument rotation during drilling operations and well overhaul and also for retention of pipe string which is locating on elevator.

TECHNICAL SPECIFICATIONS

Drive	Mechanical
Table opening, mm	250
Allowed load for rotary table (when locking device is on), kN, (tf)	785 (76,48)
Table rotation speed, rpm not exceeding	146
Allowable transmission capacity, kW	150
Guide well tube square side, mm	80
Rotor weight, kg	518
Overall dimensions, mm	
- length	1052
- width	770
- height	383



SUSPENDED SPLIT-TYPE TONGS KPR-12

Suspended split-type KPR-12 are designed for spinning - up and uncoupling of tubing and drill pipes of different diameters during well work-over and production maintenance part of hydraulic lifting rig.

The tong consist of:

Replaceable grippers - 2 pcs., stopper - 1 pc., shock-absorber suspension and shock - absorber - 1 pc., hoses - 3 pcs.

* Set of spare parts and accessories: 1 Brake band - 2 pcs. 2. Roller - 2 pcs. 3. Slips.

* On Client's requisition, the tongs can be additionally completed with:
jet thrust stay, hydraulic cylinder, manipulator.



TECHNICAL SPECIFICATIONS

Maximum torque, kNm on the lowest / the highest gear	12/4
Nominal diameters of spinned-up and uncoupled pipes, mm	60, 73
Nominal diameters of spinned-up and uncoupled pipes, mm (on order)	89, 102, 114, 73B, 89B
Required hydraulic drive parameters: capacity, kWt	30
Pressure in hydraulic system, MPa	16
Operating fluid flow, dm ³ /min	140
Overall dimensions of tongs: length, width, height, mm	1050x700x560
Weight of tongs without set of spare parts, kg	350

AUTOMATIC HYDRAULIC DRIVE TONGS APR-2-GP FOR WELL UNDERGROUND REPAIR



Tongs APR-2-GP is designed for mechanization of the operations of spinning - up and uncoupling, holding suspended and freeing of tubing during underground repair of wells.

Set of supply:

1. Slip hanger for pipes;
2. Slip hanger with slips;
3. Slips for diameter 60mm -2 sets; 73mm - 2 sets;
4. Centralizer liners for pipe diameters 60,73 mm - 1 piece each.

TECHNICAL SPECIFICATIONS

Maximum torque, kNm (kg/cm)	3,0 (300)
Nominal diameters of pipes, spinned-up and uncoupled by the tongs, mm	60, 73
Nominal diameters of pipes, spinned-up and uncoupled by the tongs, mm (on order)	48, 89
Speed of carrier rotation, rev/min	8-55
Load capacity, t	60
Tongs drive - hydraulic, from the rig hydraulic system	
Weight, kg, not exceeding:	
- tongs as-assembled	200
- complete set	270
Overall dimensions of tongs: length, width, height, mm	720x480x720



CHAIN WRENCHES (Kts, KTso, KtsN types)

Wrenches Kts are designed for manual spinning - up and uncoupling of joints of grade tubes.

Supply set consists of:

1. Assembled wrench - 1 piece;
2. Spare anvil - 1 piece.

Only wrench 1KTs is completed with spare anvil



TECHNICAL SPECIFICATIONS

	KTs	KTso-1	KtsN -1	KtsNI-01
Nominal diameter of spinned-up and uncoupled tubes, mm	48-114	60-114	60-114	60-245
Maximum torque, kN/m	1,0	1,1	1,1	2,9
Maximum allowed load on arm end with lengthening bar, kg	98	166	95	116
Weight of assembled wrench, not exceeding, kg	6,2	10	14	18
Overall dimensions, mm:				
Length with lengthening bar/ without lengthening bar	1040/540	660	1160	1160
- width	66	110	110	110
- height	46	110	110	110
- chain length	484	667	667	1345

MANUAL SUCKER-ROD TONGS (KShR)



KShR tongs are designed for spinning-up and uncoupling of threaded joints on sucker rods with nominal diameters: 16, 19, 22 and 25 mm.

TECHNICAL SPECIFICATIONS

	KShR.000	KShR.000-01	KShR.000-02
Sucker rod nominal diameter, mm	16	16, 22	25
Maximum torque, kNm, not exceeding	1,0	1,0	1,0
Overall dimensions, mm	490x106x30	710x106x33	710x106x38
Weight, kg	3,1	4,65	4,7

CIRCULAR SUCKER-ROD TONGS (KShK)

Circular lowering iron KShK is designed for unscrewing of rods by fastened pump piston.



TECHNICAL SPECIFICATIONS

Rod diameter, mm	12, 16, 19, 22, 25
Outline diameter of lowering iron, mm	550
Weight, kg	6,8



WRENCH FOR PUMP-COMPRESSOR PIPE (KTGU-M)

Wrenches KTGU are designed for mechanical and manual spinning-up and uncoupling of threaded joints on pump-compressor pipes.

Set of supply consists of:

1. Assembled consists of
2. Set of spare parts
3. Anvil - 2 pcs
4. Spring - 1 pc.



TECHNICAL SPECIFICATIONS

	KTGU-M60	KTGU-M73	KTGU-M89
Nominal diameter of spun-up and uncoupled tubes, mm	60	73	89
Maximum torque, kN/m	3,0	3,5	4,5
Maximum allowable load on handle end, N	11800	13700	16100
Wrench weight, not exceeding, kg:			
- assembled;	4,0	4,5	7,0
- complete set;	4.3	4.8	7.3
Overall dimensions, mm:	330 x 142 x 65	344 x 154 x 74	382 x 187 x 74

PIPE WRENCH (KT)



KT wrenches are designed for automatic and manual spinning-up and uncoupling of oil grade pipes by seizing them in body or coupling area.

Set of supply consists of:

1. Assembled wrench
2. Spare parts set
3. Anvil -1 piece
4. Slip - 1 piece

TECHNICAL SPECIFICATIONS

	KT48-89	KT89-132
Nominal diameter of pipe and coupling hold, mm	48-89	89-132
Maximum torque, kN-m	3,5	4,5
Maximum allowable load on handle end, kg	980	1176
Weight, not exceeding, kg:		
- assembled	7,9	9,6
- complete set	8,7	10,4
Overall dimensions, mm:	486 x 130 x 120	510 x 140 x 120



OIL REFINING EQUIPMENT

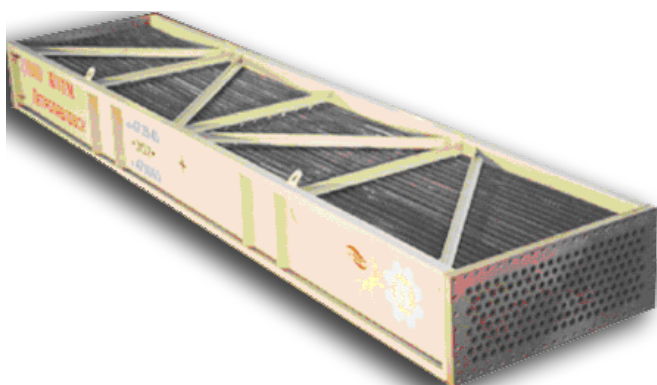


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SECTIONS FOR AIR COOLING UNITS



Section for air cooling unit of horizontal or zigzag type are designed for condensation and cooling of vapors, gases, and fluids with nominal pressure up to 6.3 MPa in technological processes of oil refining, chemical, petrochemical, gas and allied industries according to GOST, ASME and API standards.

TECHNICAL SPECIFICATIONS

Nominal pressure, kgf/cm ²	6 (16), 25 and 64
Temperature, C	from -40 up to + 300
Tube ribbing ratio	9; 14,6; 20
Number of tube rows	4, 6, 8
Number of tube passes	1, 2, 3, 4, 8
Length of tubes, m	1,5; 3; 4; 6; 8
Heat exchange surface of ribbed tubes, m ²	from 105 up to 2136
Material of tubes	Steel 20, 15X5M, 12X18N10T, 10X17N13M2T, brass LOMSh 70-1-0,05
Material of ribbing	Ad1
Weight, t	from 1,5 up to 6

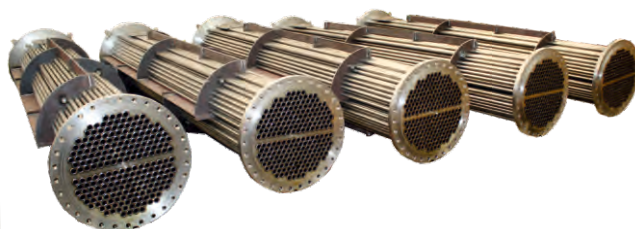
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TUBE BUNDLES FOR SHELL-AND-TUBE HEAT EXCHANGERS

Tube bundles are designed for heating, cooling, condensation of fluid and gas media in heat exchanging equipment with floating head or U-type tubes used in technological processes of oil-refining, chemical, petrochemical and gas industries according to GOST, ASME, TEMA standards.



MATERIALS

Tubes – brass, carbon steel (steel 10-20), heat-resistant steel (15X5M), stainless steel (12X18N10T, 10X17N13M2T).

Tube sheet – bimetal (steel + brass), heat-resistant steel (15X5M), stainless steel (12X18N10T, 10X17N13M2T).

TECHNICAL SPECIFICATIONS

Shell diameter, mm	325-1600
Pressure, kgf/cm ²	up to 100
Length of heat exchanging tubes, mm	3000-12000
Diameter of heat exchanging tubes, mm	20; 25
Heat exchange surface, m ²	9,4-2000

TANKS



Tanks (low pressure vessels) are designed for collection and storing of different liquids in operating procedures of oil refining, chemical and petrochemical industries according to GOST and ASME standards.



TECHNICAL SPECIFICATIONS

Case diameter, mm	up to 2600
Capacity, m ³	up to 48
Sidewall width, mm	up to 30

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SHELL-AND-TUBE HEAT EXCHANGERS WITH FIXED AND FLOATING CASING HEADS



Shell and tube heat exchanger are designed for heating, cooling, condensation of fluid and gas media in technological processes of oil-refining, chemical, petrochemical and gas industries according to GOST, ASME, TEMA standards.

MATERIALS

Shell – carbon (Vst.3sp5), heat-resistant (15X5M), stainless steel (12X18N10T, 10X17N13M2T).	Shell – carbon (Vst.3sp5), heat-resistant (15X5M), stainless steel (12X18N10T, 10X17N13M2T)
Heat exchanging tubes – carbon (10, 20), heat-resistant (15X5M), stainless steel (12X18N10T, 10X17N13M2T), brass (LO62-1)	Heat exchanging tubes – brass (LO62-1), carbon (10, 20), heat-resistant 15X5M, stainless steel (12X18N10T, 10X17N13M2T)
Tube sheets – low-alloy (16GS), stainless steel (12X18N10T, 10X17N13M2T), bimetallic (16GS+LO62-1)	Tube sheets – low-alloy (16GS, 9G2S), heat-resistant (15X5M), stainless steel (12X18N10T, 10X17N13M2T)

TECHNICAL SPECIFICATIONS

Shell-and-tube heat exchangers with fixed casing heads		Shell-and-tube heat exchangers with floating casing heads	
Shell diameter, mm	159-1800	Shell diameter, mm	325-1400
Pressure, kgf/cm ²	up to 63	Pressure, kgf/cm ²	up to 63
Length of heat exchanging tubes, mm	2000-9000	Length of heat exchanging tubes, mm	3000-12000
Diameter of heat exchanging tubes, mm	20; 25	Diameter of heat exchanging tubes, mm	20; 25
Heat exchange surface, m ²	1,5-1300	Heat exchange surface, m ²	9,4-2000



DOUBLE SHELL-AND-TUBE HEAT EXCHANGERS WITH FLOATING HEAD OR U-TYPE TUBES



Double shell and tube heat exchanger are designed for heating, cooling, condensation of fluid and gas media in technological processes of oil-refining, chemical, petrochemical and gas industries according to GOST, ASME, TEMA standards.

MATERIALS

Made of ASME materials	Made of GOST materials
Shell – low-alloy steel SA 516 Gr70	Shell – low-alloy steel 16GS, 09G2S
Heat exchanging tubes – carbon steel according to SA 179	Heat exchanging tubes – steel 10, 20
Tube sheets – forging SA 350LF2	Tube sheets – forging IV gr. GOST8779 made of steel 09G2S; plate from steel 16GS; 09G2S

TECHNICAL SPECIFICATIONS

Shell diameter, mm	325-1400
Pressure, kgf/cm ²	up to 50
Length of heat exchanging tubes, mm	3000 - 9000
Grades of heat exchanging tubes, mm	19x2,11; 20x2; 25x2,5; 25x 2,77
Heat exchange surface, m ²	up to 2740

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DEVICE FOR BOTTOM DRAIN OF VISCOUS OIL PRODUCTS



Heating and runoff of viscous oil products
from railway tank cars.

TECHNICAL SPECIFICATIONS

Time of heating and runoff of viscous (black) oil products at ambient temperature -40C, h	from 6 up to 10 depending on oil product type
Drained product viscosity (for reduced crude M-100) at temperature 80C, RV	16
Circulating pump:	
- capacity, m ³ /h	30
- outlet pressure, kg/cm ²	6
- electric motor power, kWt	11
Discharge pump:	
- capacity, m ³ /h	15
- outlet pressure, kg/cm ²	6
- electric motor power, kWt	4
Heat exchanging unit:	
- thermal agent	steam
- steam rate (maximum), kg/h	1000
- steam temperature at pressure 6 kg/cm ² , C	160
- heating area, m ²	43
Discharge tank:	
- capacity, m ³	0,83
Overall dimensions: monoblock (heat exchanging unit/discharge tank, including binding)	
- length, mm	4093
- height, mm	2900
- width, mm	3330
Weight, kg	3500



ENERGETIC EQUIPMENT



SEPARATOR WITH MEASURING BLOCK



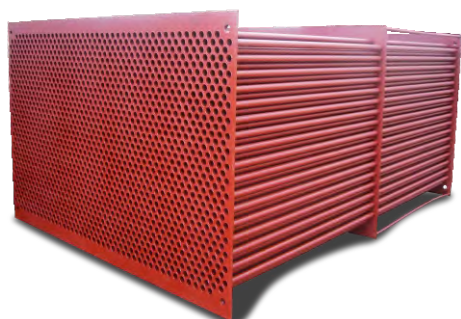
Three - phase separator is designed for separation of oil from gas and water including measurement of the amounts of refined oil, extracted water and gas with temperature and pressure control.

Manufacturing complies with requirements of the Client, "The rules of pressure vessels design and safe operation" of the Republic of Kazakhstan, and state standards, accepted in the Republic of Kazakhstan, according GOST and ASME standards.

TECHNICAL SPECIFICATIONS

Hazard class	1
Working pressure, MPa (kg/cm ²) (in vessel and piping)	0,4...0,12 (4...12)
Working temperature	20...60
Gas flow, m ³ /h	125...13300
Gas density at working temperature, kg/m ³	3,49
Total liquid flow, m ³ /h	up to 83
Liquid composition	Hydrocarbons, water
Liquid density at 20 C, kg/m ³	661,6 for hydrocarbon 1000 for water
Liquid viscosity, with P	0,3...0,9
Inspection manhole in the tank	Manhole 24" with a swinging bracket
Total volume capacity of separator tank, m ³	~24
Separator weight with measuring block, kg	~14000

AIR HEATERS



Air heaters are designed for heating of the air before feeding to the boiler fire chamber. Air heaters are manufactured in accordance with Branch Standard 108.030.45-82.

MATERIALS

Tubes - steel, straight-line-seam, electric-welded tubes (steel 10 or Vst2)
Tube sheets - high-quality carbon structural steel, simple steel, high - alloy anticorrosion and heat - resistant steel.
Metal ware - high-quality carbon structural steel, simple steel.

TECHNICAL SPECIFICATIONS

Working pressure, kgf/cm ²	Up to 0,6
Tube sizes, mm	Ø40x1,5; Ø40x1,6; Ø40x2,0; Ø40x3,0; Ø51x1,5
Weight, t	Up to 90

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GASPROOF PANELS FOR BOILERS HEATING



Heating surfaces are applied for heat-transfer agent transmission in energotechnological boilers, steam superheaters, economizers, utilizer boilers, etc. Technical requirements at designing and manufacturing complies with "Sate requirements for steam and hot - water boilers"

TECHNICAL SPECIFICATIONS

Tube material	carbon, alloy, high-alloy chromium and chromium-nickel austenitic steel
Tube type	plain, tube-in-sheet
Tube diameter, mm	from 16 up to 89
Temperature, °C	up to 600
Pressure, MPa	up 50
Blockd weight, kg	up 20 000

SUPERHEATER BANKS



Superheater bank is designed for steam exhausting in the boiler. Superheater banks has been manufactured in accordance with RoK technical regulations "Safety requirements for hot-water boilers and steam boilers" (Government Regulation #2126 issued 2009.12.15), "Industrial safety requirements for hot-water boilers and steam boilers safe operation" (Order #172 issued 2008.09.18) and design documentation.

MATERIALS

Coil tube	Steel 12X1MF
Collector	Tube steel 20

TECHNICAL SPECIFICATIONS

Working pressure, kgf/cm2	over 0,7
Tube sizes, mm	Ø28x3,0; Ø32x3,0; Ø38x3,0
Weight, t	up to 20,0



RAILWAY EQUIPMENT



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16-1807-04 MODEL REFRIGERATOR CAR



Refrigerator car is intended for the transportation of perishable and non-perishable piece goods, container goods as well as packaged goods that require protection from atmospheric precipitation and sudden temperature differences by 1520 mm gauge railways.

TECHNICAL SPECIFICATIONS

Carrying capacity, t, not exceeding	58
Container weight, t	35,5±0,5
Estimated static load of the wheelpair to the rails, kN (tf)	230,5 (23,5)
Car body volume, m, not less than	145
Inside body dimensions inside, mm:	
- length along the plane of the covering at corrugation covering	18375±10 18367±10
- width along the plane of the covering at corrugation covering	2750±5 2742±5
- height along the side wall	2540±2
- height from flooring to roof, not exceeding	2970
Length of the car along the clutch axes of automatic couplings, mm	19840 (+65; -45)
Dimension in accordance with GOST 9238	1-BM
Specific material consumption (container coefficient)	0,616
Design speed, m/s (km/h)	33,3 (120)
Car base, mm	14640±10
Dimensions of the doorway in the light, mm	2850±3x2110±3
Floor area, m	50,5±0,5
Number of doors, pcs.	2
Automatic coupling model	CA-3
Automatic coupling axis height from the level of the rail heads, mm	1060±20
Body barriers heat transfer coefficient, W/(m ² K), not exceeding	0,25

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RAIL LIFTER PR -1.2



Rail lifter is designed for changing and transporting of rails R50, R65, R75 by rail ways with gauges of 1520 mm.

TECHNICAL SPECIFICATIONS

Load capacity, t	1,2
Drive type	manual
Lifting mechanism brake type	automatic/frictional
Brake stock rate	1,5
Height of rail lifting above gauge plane, mm, not less than	450
Value of travel of pulley block along lifter travel, mm, not less than	830
Handle effort during rail lifting, kgf, not exceeding	20
Lifter weight, kg, not exceeding	116
Overall dimensions, mm, not exceeding	
- length in transport position	2365
- length in operation position	1925
- width	810
- height above rail head	970



RAIL JOINT EXPANDER RG-30

Rail joint expander is designed for longitudinal shifting of rails and restoration of normal clearances between rails. It is applied on broad railway gauges laid of R50, R65, R75 rails according to GOST 24182.



TECHNICAL SPECIFICATIONS

Maximum spreading effort, Kn	303
Spreading cylinder piston diameter, mm	80
Quantity of cylinders, pcs	2
Pressure in hydraulic system, MPa - working pressure - maximum pressure	0...30 33
Maximum separation rate, mm - without intercept - with intercept	150 300
Pump handle effort at working pressure, N, not exceeding	230
Working fluid	AU, VMGZ, MGE-10A
Weight, kg	78
Overall dimensions, mm, not less than - length - width - height (without handle)	950 370 350

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RAIL JOINT EXPANDER RG-23



Rail joint expander is designed for longitudinal shifting of rails and restoration of normal clearances between rails. It is applied on broad railway gauges laid of R50, R65, R75 rails according to GOST 24182.

TECHNICAL SPECIFICATIONS

Maximum spreading effort, Kn, (t)	230 (23)
Spreading cylinder piston diameter, mm	50
Quantity of cylinders, pcs	2
Pressure in hydraulic system, MPa	
- working pressure	0...60
- maximum pressure	64
Maximum separation rate, mm	100
Pump	manual, four plunger
Pump handle effort at maximum pressure, N, not exceeding	250 (25)
Working fluid, oil	AU, VMGZ, MGE-10A
Weight, kg, not exceeding	40
Overall dimensions, mm, not less than	
- length	700
- width	250
- height (without handle)	570



RAILWAY JACK ZhD 12M, ZhD-14, ZhD-12



Railway jack is designed for alignment of rail-sleeper grid during tracks running service and different types of repair.

TECHNICAL SPECIFICATIONS

	ZhD-12	ZhD-12	ZhD-14
Maximum load capacity, KN (ts)	120(12)		140 (14)
Rod pass, mm, not less than	185	170	-
- without intercept	-	-	140
- with intercept	-	-	220
Pressure in hydraulic system, Mpa (kgf/cm ²)			
- working pressure	0..26	0...61	0..28,5
- maximum pressure	(0..260)	(0...610)	(0..285)
Working fluid, oil	AU, VMGZ, MGE-10A		
Working fluid volume, l	1,2	0,45	1,4
Pump handle effort at maximum working pressure, N, (kg), not exceeding	250(25)		210 (21)
Weight, kg, not exceeding	25	22	23
Overall dimensions, mm			
- length	238	300	367
- width	215	210	200
- height (without handle)	604	445	260



RAIL-SLEEPER GRID LINER ZhR-7



Rail-sleeper grid liner is designed for lining of rail-sleeper grid during railway tracks running service and different types of works.

TECHNICAL SPECIFICATIONS

Maximum working spreading effort, Kn, (t)	70 (7)
Rod pass, mm, not less than	90
Cylinder diameter, mm	60
Quantity of pump elements	2
Pressure in hydraulic system, MPa (kgf/cm ²)	
- working pressure	0..26 (0..260)
- maximum pressur	28 (280)
Working fluid volume, l	0,6
Pump handle effort at maximum pressure, N, (kgf), not exceeding	240 (24)
Weight, kg, not exceeding	21
Overall dimensions, mm, not exceeding	
- length	535
- width	170
- height (without handle)	335



RAIL-DRILLING MACHINE RSA-36

Rail - drilling machine is designed for boring of holes for splice bolt in rail web of R75, R65, R50 GOST 24182 type according marking-out.



TECHNICAL SPECIFICATIONS

Engine model	Honda Gx 120, 1-cylinder, 4-cycle, with horizontal shaft
Cooling	Forced, air
Maximum torque consumption at 2500 rpm, Nxm	0,75
Engine start-up	Cord with automatic reverse
Fuel	petrol
Fuel tank capacity, l	2,5
Borer type	Circular, with removable multiplex cutting plates
Spindle rotary speed, rpm	2500 - 2700
Boring pass, mm	28
Maximum boring diameter, mm	22; 36
Borer feed	automatic
Overall dimensions, mm, not exceeding:	
- length	1100
- width	485
- height	420
Weight without fuel, kg, not exceeding	48



RAIL CUTTING MACHINE R400



Rail - cutting machine is designed for cutting of solid hardened and unhardened rails of R50, R65, R75 types (without any changes of metallurgical and mechanical specifications of rail).

Machine engine is equipped with three stepped filter system and compensator.

Compensator provides absence of mixture overrich at increased filter contamination.

Fuel/air ratio remains constant, periods between filter cleaning works extended significantly.

Rail cutting from two sides with machine vertical turnover is allowed. Rail - cutting machine is equipped with quick-detachable toggle clip for fastening on rail.

TECHNICAL SPECIFICATIONS

Maximum rotary speed of engine, rpm	3960
Weight without disc, kg	15
Cutoff wheel type, mm	armed, with working speed 80 m/sec
Maximum diameter of cutoff wheel, mm	400
Bore diameters for cutoff wheels installation, mm	20, 32

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CONTROL RESERVOIR R7-78 GOST 1561-75

Air control reservoir for automatic brakes of freight cars and coaches, electric trains, diesel trains and also for transit vehicle and tramways.



TECHNICAL SPECIFICATIONS

Design pressure, MPa (kgf/cm ²)	0,7(7)	
Capacity, l	78	135
Nominal nozzle threading size, inches: - sidewall - bottom	G1/2"-V GOST 6357-80 G3/4"-V GOST 6357-81	
Vessels group	1	
Length (without nozzle), mm	1210	1180
Diameter, mm	300	400

AUXILIARY RESERVOIR 84S631067R1 GOST 32.48-95



Pressure vessel used in brake system of TA33A Evolution diesel locomotives.

TECHNICAL SPECIFICATIONS

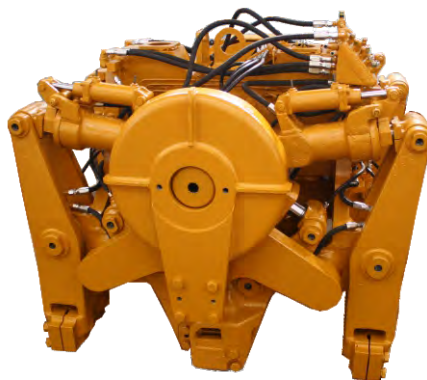
Design pressure, MPa (kg f/cm ²)	1
Volume, l	480
Weight, kg	210
Vessels type	1
Length, mm	1235
Outer diameter, mm	815



OVERHAUL REPAIR OF COMPLEX TRACK TECHNICS



Railcar AS-1A



Track packing blocks



Hand car DGKu

Overhaul repair of special rolling stock with extension of lifetime is repair carrying out for reconstruction of operability, complete repair of source with change or refreshment of any parts, including basic parts and technical diagnostics for lifetime extension.

Overhaul repair of track machine track-packing blocks UNIMAT COMPACT 08-275 3S-16 and DUOMATIC 09-32 CAT.

Overhaul reconditioning of Hand car DGKu :

- installation of diesel YaMZ-238,
- installation of long-base cab, installation of safety system "CLUB",
- rolling up of new formation wheel pair,
- installation of heaters in cabin, etc.

Overhaul reconditioning of Rail car AS-1A:

- replace of engine to diesel YaMZ-236 or D-245 with replacing control panels,
- installation of generator BG-30,
- installation of safety system "CLUB",
- reinforcement of rail car carrying frame,
- installation of new wheel pairs on all-rolled wheels,
- replacement of cabin with internal plating, installation of heaters in cabin, etc.

COUPLER KEY 106.00.002-2, 106.00.002-3

Coupler key is designed for connection of automatic couplers and tractive clips in automatic coupling devices of rail way carriages with broad gages. Steel 38HS GOST4543-71.

FRICTION BAR 100.00.008-0

Friction bar is designed for protection of Khanin bogie side frame from rapid wear. Steel 40H GOST 4543-71 G/o 30...40 HRC.

BRAKE BLOCK PIN 100.40.014-0

Brake block pin is designed for connection of block and shoe in rail cars braking devices. Pin 2 GOST 1203-75. Steel 5 sp 2 GP GOST 535-2005 27...35 HRC.

PENDULOUS SUSPENSION BRACKET 106.00.012-0

Pendulous suspension bracket is designed for tractive clips support in automatic coupling devices of rail way carriages with broad gages. Steel 38HS GOST 4543-71. Gr. IV KP 640 GOST 8479-70.

BRAKE BLOCK SUSPENSION BUSH 100.40.028-1/T258-00-1

Brake block suspension bush is designed for suspension shock absorption during its fastening.

BRAKE BLOCK SUSPENSION BRACKET ROLLER 100.40.013-0

Brake block suspension bracket roller is used as suspension axis during its fastening.

READY FITTED VALVE CAP 1443.07.020

Valve cap is designed for protection of breather valve on rail way truck tank from damages.

MANHOLE CAP 100.10.003-0

Cap designed for hermetization of wheel pair box junction.

BOGIE BEARER CAP 100.00.030-0

Coupler key is designed for connection of automatic couplers and tractive clips in automatic coupling devices of rail way carriages with broad gages. Steel 38HS GOST4543-71.

**DRIVING DISC D 100.03.001**

Driving disc of elastic clutch connection with diesel generator 2D100. Made of steel 40. Heat treatment Термообработка HB 241...285

**DRIVEN DISC D 100.03.002**

Driven disc of elastic clutch connection with diesel generator 2D100. Made of steel 40.

**SOLEBAR PHENOPLAST BUSH 100.00.009-0**

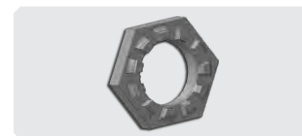
Solebar phenoplast bush is designed for installation of brake drum support.

**LABYRINTH PACKING RING 100.10.007-0**

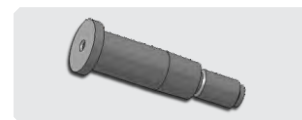
Labyrinth packing ring is designed for consolidation of wheel pair box junction.

**BUTT NUT 100.10.012-5**

Butt nut is designed for fastening of bearings in wheel pair box junction.

**READY FITTED CLUTCH FINGER 1089.191.32**

Clutch finger is designed for transmission of torque consumption in clutch.

**STOP BAR 100.10.004-0**

Stop bar is designed for stopping of wheel pair bearing assembly nut.



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CUTTER FASTENERS SET KZh-20



SET COMPOSITION

No	Name	Unit	Quantity
1	Screw M 4x30	pcs	260
2	Nut M 4	pcs	260
3	Spring washer D 4 65G GOST 6402-70	pcs	260
4	Compensatory washer T=0,5	pcs	65
5	Compensatory washer T=0,6	pcs	65
6	Compensatory washer T=0,7	pcs	65
7	Compensatory washer T=0,8	pcs	65
8	Compensatory washer T=0,9	pcs	65
9	Compensatory washer T=1,0	pcs	65
10	Compensatory washer T=2,0	pcs	65
11	Compensatory washer T=2,5	pcs	65
12	Compensatory washer T=3,0	pcs	65
13	Knife wedges (dowels)	pcs	80
14	Screw M 8x18 with recess	pcs	80
15	Screw M 10x25 GOST 11738-84	pcs	40
16	Screw M 12x70 GOST 11738-84	pcs	40

SPARE PARTS FOR TRACK-PACKING BLOCKS

UNIMAT COMPACT 08-2 75 3S -16 SPARE PARTS		
1.	Ready fitted clutch	E20.13
2.	Lifting cylinder	EB-UD211IT
3.	Spacer ring	D123.108
4.	Spacer ring	W37.2040
5.	Spacer ring	2E22.04A
6.	Ring	2E22.07
7.	Ring	2E22.08A
8.	Stop ring	2E34.228
9.	Strip	G2026-1
10.	Pivoted arrester	UD10.2424
11.	Track packer frame lifter	CA 50.1100.000
DUOMATIC 09-32CAT SPARE PARTS		
1.	Block lifting cylinder	UD211.(21X1)
2.	Wheel support	UD50.2200
3.	Wheel support	JT50.450
4.	Cylinder support	UD50.2600
5.	Roller	UD80.4208
6.	Pneumatic cylinder	PN2Z-G.50/16/250
7.	Pneumatic cylinder	PN2Z-G.70/20/200
8.	Pneumatic cylinder	PN2Z-G.100/25/300

SPARE PARTS FOR RAILWAY EQUIPMENT

1.	Spring	1443.07.007
2.	Spring	1143.07.014
3.	Spring	8TN.281.073
4.	Spring	8TN.281.140
5.	Spring	8TN.281.261
6.	Spring	8TN.281.372
7.	Spring (lowering)	8TN.281.461
8.	Spring	8TN.281.586
9.	Clip	8TN.145.013
10.	Clip	8TN.145.102
11.	Cap	400.47.000
12.	Plug	400.47.00.01
13.	Spring	Zhd.001
14.	Case	500.47.010.001
15.	Spring	500.47.010.003
16.	Bushing	500.47.010.001
17.	Case	501.47.101
18.	Strengthening cap	100.10.002-0
19.	Outlet valve	1443.07.030
20.	Coupling bolt	1443.01.180
21.	Longitudinal border	401.01.040
22.	Wedge (for gondolacar)	401.01.141
23.	Axial bearing LI GOST 3616-74	(532.02.106-0)
24.	Bevel remover FS22	FS22.00.000
25.	Bevel remover FS36	FS36.00.000
26.	Manhole cover	726.45.014
27.	Work driver	41220
28.	Installation of driving pulley	41736
29.	Nut of type I	80.25.402
30.	Special nut of type II	81.26.326
31.	Flange	2TE10L.85.08.126-1
32.	Flange	2TE10L.85.08.128-1
33.	Flange	2TE10L.85.08.144-1
34.	Flange	2TE10L.85.20.148-1
35.	Semiring	2TE10L.85.08.321
36.	Air distribution cuff	270.313
37.	Air distribution cuff	270.317
38.	Air distribution cuff	270.397
39.	Air distribution cuff	270.397-3
40.	Gasket	270.399
41.	Gasket	270.399-2
42.	Large diaphragm	270.716-2
43.	Cuff	270.769
44.	Disk-shaped washer	6407-40.000.006

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